

COMPANY PROFILE

Elna Magnetics | BY ALISON BUTLER

CHANGING THE MAGNETIC FIELD

From artificial hearts, to driverless cars, solar arrays and wind turbines, Elna Magnetics' products can be found in a wide variety of the world's most advanced technology. Elna Magnetics produces and distributes magnetic cores that are used in power applications. But what does that mean? When current flows through a coil of copper wire it creates a magnetic field. It was discovered many years ago that when an iron rod was inserted in the "hole of the wire donut" the magnetic field changed.



Jacob Montalbano loading parts for gapping.

The magnetic core is essentially the iron rod and it can change the properties of the electrical field surrounding it. This technology is the reason you don't get shocked when you ring a doorbell, the direct current (DC) powering the doorbell is converted from alternating current (AC) which is what is used to power our homes. The same is true for plug-in electric cars, and your cell phone, and just about anything else using DC current. Elna uses ferrite and other materials to produce ceramic cores that have electrical properties that can modify the characteristics of the magnetic field created by an electrical current. Elna's products are often a custom design and are used in applications that build products to modify a magnetic field for the medical, aerospace, semiconductor, industrial, and military industries.

These magnetic cores, which can vary in size, from something that would fit in the palm of your hand to ones that are 2 feet in diameter, are also very fragile since they are made of ferrite. Ferrite is a ceramic material made up of iron oxide, and blends of nickel, manganese and zinc. After firing the ferrite is like glass and quite delicate. In fact, when on-boarding new machinists, Joe Ferraro, President of Elna Magnetics, will have them pack or unpack the parts for several days before actually trying to machine it so they learn to respect the material's fragility. While a certain amount of chipping is allowed by industry standards, the tolerance is very low and a crack would compromise the part. Magnetic cores used for space and the medical industry have the highest quality standards.

When Elna got its start in 1955, Ulster County and the Hudson Valley were a center for ferrite manufacturing. Companies like Ferroxcube and National Micronetics were humming along employing hundreds of workers and setting industry standards. Elna was founded as a custom machine shop by an employee of Ferroxcube's Saugerties plant, who did the machining in his spare time.

The company has grown and evolved over the years. The original facility was a one-room schoolhouse in Woodstock, NY. By the mid-1960's the company had grown and moved into an old bowling alley, also in Woodstock, and its focus was the custom machining of parts. In the mid-1980's the company changed its marketing strategies and Ferroxcube chose Elna to be its partner, establishing a long-term relationship that continues to this day even after Ferroxcube closed its Saugerties operations in 1999. In 1995 Elna became a distributor of Fair-Rite Products as well. Fair-Rite Products is located in Wallkill, NY and is a member of the Council of Industry. Elna also distributes the products from other ferrite producers and approximately 60% of their business today is distribution with the other 40% custom machining and gapping.

"There are many applications you can't just order out of a catalog and Elna could not survive without the custom business. It's that niche market that drives the high value-added production. Elna has always been a custom machine shop, we just folded in distribution lines," explains Joe Ferraro. He came to Elna in the mid-2000's after working at National Micronetics, another local ferrite manufacturer that was located in Kingston at the time. By now there were more competitors machining ferrite and the convenience of "one stop shopping" became important to many customers. So

"We heavily invest in our employees and equipment."



Three of the owners of Elna. Jimmy Ferraro, Stephanie Melick and Joe Ferraro.

Elna made the strategic decision to grow its distribution lines while at the same time developing a more sophisticated and efficient machining processes to differentiate themselves from the competition.

That requires investments in machinery and in skilled people. "We heavily invest in our employees and equipment. There is only one other company in the U.S. that does custom ferrite machining," said Joe Ferraro. As the company expanded in the early 2000's it out grew the bowling alley, which was 18,000 sf, and made plans to relocate to its current facility in Saugerties, N.Y., which is 32,000 sf and has room for expansion.

Stephanie Melick, Executive VP, explains that the move was not simply about having more space, but that it was essential to implementing the company's plan for strategic growth. "The success we've had in recent years wouldn't have been possible if we stayed in the smaller facility. When designing the building, the architect asked about the flow of business and really wanted to understand the movement of people and materials. The new facility was laid out to improve this efficiency and allow for expansion by doubling the size." Originally when the company moved to Saugerties in 2009, there

were only 2 CNC machines, now there are 7, employees have increased from 38 to 57, and there is still room for growth. Elna also has an office in California that employs 3 people.

Precision machining has been very important since the company's start and Elna has invested in a Starrett Coordinate Measuring Machine to test their products and ensure they are meeting the standards

required by their customers. The military has extremely tight tolerances for their projects. More often customers are requiring reports, measurements and best practices efficiencies.

Elna's largest area of growth is with the defense sector. Joe Ferraro explains, "The military is all custom design. We have made components that are used onboard ships for anti-missile systems. We partner with them to make the designs and they come up with work." In fact, custom designs are Elna's niche. "We love customers that want to work together with our engineering expertise and machine 'know how' to develop the best core possible."

Other applications include the solar energy industry. Elna cores are used in inverters which turn solar power into usable electric energy for homes. Elna's products are also used in commercial aircraft guidance systems and their products have been used in driverless cars in the system that senses other vehicles and surroundings. Medical applications include artificial hearts and implantable defibrillators. In addition, magnetic cores are used in equipment that manufactures semiconductor chips.

"Nothing is simple anymore," says Joe Ferraro. "Most of our customers have at least one certification, ISO, AS, etc. and therefore have an ever-increasing list of requirements." Elna is now ISO 9001 and AS 9100 certified along with ITAR and NY State SHARP certification for safety. "All of this is important to remain competitive in the market as well being able to provide a safe and clean work environment for our employees."

As Elna bought new equipment they have had to develop their own technology to machine the glasslike ferrite. As Stephanie Melick puts it, "if you look at it cross eyed it will chip." Machinists are frequently reminded that they are using machines made to work on metal to machine a ceramic and

that means they have had to modify and refine their techniques. There is a continual learning process involving the use of tools, coolant application and other trade secrets, to become more efficient in both the machining and gapping processes as well. Joe Ferraro says, "You have to keep moving, evolving all the time."

A big part of Elna's business is "Gapping." When dealing with a magnetic core, the gap between the two pieces of ferrite influences the amount of current it is able to withstand before becoming saturated. Once reaching the saturation point the magnetic core stops working. Increasing the gap between the center posts allows the product to become more powerful.

"Twenty years ago, Elna did a small volume of gapping, maybe 100 cores, but now we have the equipment and capabilities to do large volume orders for gapping," explains James (Jim) Ferraro, Vice President, Joe's son who joined the company in 2010. "Tolerance wise we can hold gaps to one half of 1/1,000th of an inch. On the manufacturing side there is no one that does all that we do. There are several companies that do gapping, and one or two that provide custom core manufacturing, but we are the only company within NAFTA that does both."

On the operation side of the business Jim explains, "We have upgraded our ERP system which has opened up a world of opportunities to make our lives inside the building simpler. We have more custom reports to better analyze data and are 95% of the way to implementing barcoding throughout our warehouse."

"When I came to Elna it was just after the telecom market crashed and 9/11, in this business you could sell anything for any price you wanted. Elna offered excellent products and excellent customer service," says Joe Ferraro. "Now there are customers that require price reductions and we have requests

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Inside Elna's manufacturing facility.

to lower our prices on a daily basis.”

“At a certain point we just can’t compete because we can’t go any lower. That is the point you have to realize this product line is no longer profitable and we need to cut it and look for the next one,” explains Joe Ferraro.

Cost control is just one of the two big problems Elna is facing these days, the other is like many other manufacturers they need to recruit and train new employees to replace an aging workforce. There are several decades of combined knowledge in the brain trust that runs the machines at Elna and that is expertise that the company doesn’t want to lose as the machinists retire. With a number of employees in their late 50’s and early 60’s, Joe Ferraro is aware he is going to have to replace them at some point.



Chris Cottrill selecting a test setup for gapping.

“We do our best to stay active on both these fronts,” explains Joe. “We are willing to provide as much on the job training as required to build our workforce and to this end we recently got involved in the New York State apprenticeship program through the Council of Industry.” Elna has a few apprentices currently enrolled in the program and hope more new hires will take advantage of this opportunity to make every day on the job count towards their education and receive the certification after four years. “We very much believe in this program and like it a lot.”

In an effort to recruit those new hires Elna has also taken advantage of the Council’s Collaborative Recruiting Initiative. Jana Blazicek, Human Resources Administrator, says “The software is very user friendly and is structured in a very organized way. The Council has been helpful in posting jobs fast and it helps that the ads appear on multiple portals.” Elna has made working at the company a better place for employees by offering good benefits, increasing salaries and offering flexible time, including ‘Summer Fridays’ (a half day on Friday) and Thank you Lunch/ Breakfast days. They have Sonos-speakers in work areas and have cleaned and reorganized the building with a 5S implementation.

“Elna is committed to staying in the Hudson Valley and supports the local schools, including both high school and community colleges, in their efforts to encourage and develop kids that want to pursue a future in manufacturing and engineering,” explains Jim Ferraro. “We want to expose students to what’s available especially in those programs like the Pathways Academy and Youth Build that offer options beyond the traditional education path. “There are kids that want to work with their hands and explore education that isn’t confined to a classroom, they are the ones we want to try and get on board.”

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“Elna has been a sponsor of the SUNY New Paltz Engineering Expo for the past few years and every year I go to the expo and see the projects the students present, I am amazed,” says Joe Ferraro. “We have got engineers that are retiring soon and we have got to find somebody to fill those shoes. We are willing to take someone fresh out of school or even from a different job background and invest in training them. If we can get young people in the door, they can see manufacturing isn’t what it used to be.”

Elna is committed to improving not only their company but the reputation and image of manufacturing as a viable career. “If you are going to complain you have got to be willing to do something to fix it,” says Joe Ferraro. Elna is doing just that.

In many ways Elna is representative of manufacturing in the Hudson Valley: small, innovative, high tech, family owned and focused on the success of their customers. They are a company that is continually evolving and innovating to improve their products and exceed customer expectations.



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